



MEDICAL CENTER

**CHIP, HEALTH INSURANCE PREMIUMS AND COST-SHARING:
LESSONS FROM THE LITERATURE**

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OVERVIEW

Several million uninsured children are expected to obtain coverage under the new child health insurance program (CHIP) enacted in 1997 as part of the Balanced Budget Act (BBA) and codified at Title XXI of the Social Security Act. The program's main goal is to expand coverage and improve access to care. Since the program allows states to impose premiums¹, co-insurance and other forms of cost-sharing² on most benefits, it is important to understand how cost-sharing may affect children's access to coverage and service utilization.

The following synthesis presents the principal findings of over thirty articles and reports on premiums and cost-sharing. The articles are summarized in the attached annotated bibliography. This synthesis sets forth the major findings on the effect of premiums on program participation, and the effect of cost-sharing on the use of services and health status, as each pertains to children.

While the body of research on premiums is smaller compared to that which exists for cost-sharing, the existing literature provides a preliminary indication of the relationship between premiums and participation rates: as premiums increase as a percentage of income, fewer low income families buy health insurance. The cost-sharing literature is more abundant, and includes the RAND Health Insurance Experiment (HIE), one of the few social experiments ever undertaken with a rigorous research design. On average, a similar inverse relationship has been observed between cost-sharing and utilization of services: as cost-sharing increases, adults and children receive less care.

It is important to note that the studies reviewed share a number of general limitations. Generalizability of the results is an issue for all of the studies, but, on the other hand, this is true of any social experiment in which random sampling and control over the environment are impossible to achieve. Except for RAND HIE, which had statistically equivalent comparison groups, all other studies had imperfect matches between their "experiment" and "control" groups, making an accurate assessment of the effect of cost-sharing more difficult to achieve. Because of small numbers, studies could not find strong effects of cost-sharing in the case of children at risk of developing a condition or for low income children, and even less so when the two factors were

¹ A premium is defined as a set amount of dollars per defined payment period paid to obtain health insurance coverage. While premiums are usually lumped together with cost-sharing because they result in out-of-pocket expenditures in the same way cost-sharing does, technically they are not considered cost-sharing because, unlike cost-sharing, they are not directly associated with the use of services. However, they are directly associated with the decision to voluntarily purchase health insurance, which is relevant to the success of the CHIP program.

² Cost-sharing is defined as patient exposure to out-of-pocket costs associated with health service delivery. Cost-sharing includes co-insurance, co-payments, and deductibles. Co-insurance is a defined percentage of total charges for a service, and co-payments are a fixed dollar fee per visit paid at the point of service. The main differences between co-insurance and co-payments are the predictability and the level of patient out-of-pocket liability: co-payments are more predictable because they are based only on the number of services received, not their complexity, and result in lower expenditures for complex and costly services. Deductibles are flat dollar amounts for medical services that have to be paid by the patient before the insurer picks up all or part of the remainder of the price of services.

combined. In most cases, data are rather old and therefore might no longer be as relevant to the current situation. This may be particularly true in the case of cost-sharing and low income children as an increasingly competitive marketplace limits the extent to which providers of health services are willing or able to shift the cost of unrecovered cost-sharing to other payers. The loss of cost-shifting ability may have the results of reducing providers' ability to treat children whose families cannot meet co-payment obligations. Finally, studies were unable to show that cost-sharing has a deterrent effect limited to unnecessary care; rather they indicate that cost-sharing has an impact on both necessary and unnecessary care. Because of the unknown effect of cost-sharing on medically necessary care, policymakers should pay particular attention to designing a system of cost-sharing that encourages families to seek medically necessary pediatric care for their children, while avoiding unnecessary care.

The discussion is divided into five main parts. The first part briefly describes CHIP premium and cost-sharing requirements. The second part reviews the literature on the influence of premiums on program enrollment. The third part summarizes the literature on the influence of cost-sharing on the use of services and health status. The fourth part provides a summary of findings. And the fifth part draws some implications for the use of cost-sharing in the CHIP program.

Part One. CHIP premium and cost-sharing requirements

Under CHIP, states are given the option to expand health insurance coverage to uninsured children, either through an expansion of their existing Medicaid program, or through a separate, non-Medicaid state program, or through a combination of the two.

Requirements under the Medicaid program

Under the Medicaid program, states may impose premiums and cost-sharing under certain circumstances.

Premiums: In the case of individuals (including children) who are classified as “categorically needy” under the federal Medicaid statute³ states are prohibited from imposing any “enrollment fee, premium or similar charge”.⁴ The only exception to this rule is that a premium may be charged in the case of infants under age 1 whose family incomes equal or exceed 150 percent of the federal poverty level.⁵ States may impose premiums on individuals (including children) who are enrolled in Medicaid as medically needy individuals.⁶

Deductibles, cost-sharing and similar charges: States are prohibited from imposing “deductions, cost sharing or similar charges” in the case of children under 18.⁷ Cost-sharing may be imposed on non-pregnant adult family members, but cost-sharing must be “nominal”.⁸ While premiums may be charged in the case of medically needy children, federal law prohibits the imposition of cost-sharing on children who enroll as medically needy individuals.⁹

Federal waivers of cost-sharing limitations: The statute permits states to apply to the Secretary for waivers of the cost-sharing limitations to conduct demonstration programs. No waiver can be granted unless the Secretary finds “after public notice and opportunity for comment” that the state demonstration program will

³ The categorically needy classification includes children whose coverage is required (e.g., poverty level children, AFDC-related children, children who are eligible for SSI benefits) as well as children whom states may cover at their option and who gain their eligibility based on their income and resources rather than through “spending down” to eligibility as medically needy children (e.g., near-poor children eligible by virtue of expanded coverage under the §1902(r)(2) option and optional targeted low income children covered under Medicaid as part of a state CHIP expansion).

⁴ §1916(a)(1).

⁵ States that elect this option must cap their premiums at an amount that does not exceed 10 percent of the difference between the child’s family income (minus monthly child care expenses) and 150 percent of the federal poverty level.

⁶ I.e., children who qualify for coverage by spending down to income and resource eligibility levels.

⁷ §1916(a)(2).

⁸ §1916(a)(3). Nominality is determined in relation to the level of cash assistance provided in a state and other criteria set forth in regulations of the Secretary. Federal regulations define cost-sharing ranges that are considered “nominal”.

⁹ §1916(b)(2).

(1) test a unique and previously untested use of copayments, (2) is limited to a period of not more than two years, (3) will provide benefits to recipients of medical assistance which can reasonably be expected to be equivalent to the risks to the recipients; (4) is based on a reasonable hypothesis which the demonstration is designed to test in a methodologically sound manner, including the use of control groups of similar recipients of medical assistance in the area, and (5) is voluntary or makes provision for assumption of liability for preventable damage to the health of recipients of medical assistance resulting from involuntary participation.

To date, no state has applied for permission to conduct a cost-sharing demonstration under this provision. However, the Secretary has permitted states to impose cost-sharing on individuals who are added to Medicaid as experimental coverage groups as part of their §1115 demonstrations.

Requirements under separate, non-Medicaid CHIP programs

Under separate, non-Medicaid CHIP programs, allowable premiums and cost-sharing vary depending on whether family income is below or above 150 percent of poverty.

For families with incomes below 150 percent of poverty, premiums and cost-sharing must be “nominal,” which, according to a February 13 letter from HCFA to state officials, must be “consistent with regulations implementing section 1916(a)(3) for persons covered under Medicaid, ‘with such appropriate adjustment for inflation or other reasons as the Secretary determines to be reasonable’.” States may vary premiums and cost-sharing based on income and family size, as long as cost-sharing for higher income children is not lower than for lower income children. In all cases, no cost-sharing may be required for well-baby and well-child care, including age-appropriate immunizations. In the fifth set of questions and answers related to the implementation of CHIP issued on July 29, HCFA adopts, for purposes of cost-sharing, the definition of well-baby and well-child care used by the American Academy of Pediatrics and

incorporated in the FEHBP Blue Cross and Blue Shield benchmark plan, and the definition of routine dental services used by the American Academy of Pediatric Dentistry.¹⁰

Premiums may not exceed those allowed for the medically needy. Permitted premiums are \$19 per month or less, depending on family income and size. In a proposed HCFA rule implementing BBA, permitted co-payments would vary depending on whether services are delivered in a fee-for-service or managed care system.¹¹ Under fee-for-service, states may impose \$1 for services of \$15 or less, \$2 for services between \$15.01 and \$40, \$3 for services between \$40.01 and \$80, and \$5 for services over \$80.¹² Under managed care, states would be allowed to impose a co-payments of up to \$5 for all services, except for inappropriate use of emergency room services, which can command a co-payment of up to \$10. However, HCFA strongly encourages states to consider lower co-payments for services that cost much less than \$80, and one single co-payment for a bundle of services.

For families with incomes above 150 percent of poverty, states have more flexibility, although they must abide by some protections against excessive premiums and cost-sharing. Total annual aggregate expenditures as a result of premiums and cost-sharing cannot exceed five percent of total annual family income. States may vary premiums and cost-sharing based on income and family size, as long as cost-sharing for higher income children is not lower than levels set for lower income children. In all cases, no cost-sharing may be imposed on well-baby and well-child care, including age-appropriate immunizations.

As of September 24, 1998 21 states had federally-approved separate, non-Medicaid programs. As can be seen in the attached table, all of these states are requiring families participating in the program to contribute, in some way or another, to the cost of their care.

States impose premiums and cost-sharing on low income families for various reasons. They may want to target the neediest children, help families avoid the “welfare stigma” associated with public health insurance programs aimed at the poor, entice families to be more cost-conscious in seeking care, and reduce spending on the program. These lines of reasoning are grounded in the traditional economic theory of demand. The question then becomes what effects might be expected from varying approaches to cost-sharing. Of special interest is the effect of premiums and cost-sharing on a family’s decision to either enroll in a program or use services.

¹⁰ Subject to the prohibition against cost-sharing under Section 2103(e)(2) are: (1) all healthy newborn inpatient physician visits, including routine screening (inpatient or outpatient); (2) routine physical examinations, laboratory tests, immunizations, and related office visits as recommended in the AAP’s “Guidelines for Health Supervision III” (June 1997), and described in “Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents” (Green M., (ed.), 1994); and (3) routine preventive and diagnostic dental services (i.e., oral examinations, prophylaxis and topical fluoride applications, sealants, and x-rays) as described by the AAPD’s Reference Manual (Pediatric Dentistry, Special Issue, 1997-8, vol. 19:7, page 71-2). This cost-sharing prohibition applies equally to fee-for-service and managed care delivery systems. Health Care Financing Administration. The administration's responses to questions about the state children's health insurance program (Fifth Set). July 29, 1998.

¹¹ HCFA Letter to State Officials on Cost-Sharing, February 13, 1998.

¹² Co-payments are assessed based on the state payment for the service.

Part Two.

Premiums and the decision to enroll

Though scarce, available empirical evidence essentially confirms the prediction, based on the traditional economic theory of the demand for health insurance, that, as premiums rise as a percentage of income, overall enrollment falls, both for adults and children. While most people want to avoid high costs associated with unexpected illnesses and are willing to purchase health insurance premiums to minimize the financial losses associated with the occurrence of illness, they are also likely to be influenced by two important factors: (1) the amount of disposable income they have to spend on health insurance as opposed to other goods (e.g., food, clothing); and (2) the price of coverage (the premium). Generally, low income people are more likely to self-insure and risk point-of-service costs (i.e., bear the risk themselves) rather than forgo current income to pay a premium. The higher the premium, the less likely they are to be able to afford it.

Information on the effect of premiums on low income families' decision to enroll comes principally from a series of studies on the Washington Basic Health Plan (Ku and Coughlin, 1997; Madden *et al.*, 1995, 1992; and Lewin-VHI, Inc., 1994 in Families USA, 1997). The Basic Health Plan is a state-subsidized program for low income families under 200 percent of poverty. One of these studies also examined Medicaid expansion or state-subsidized programs in three other states—Hawaii, Minnesota, and Tennessee (Ku and Coughlin, 1997). All three studies found that premiums influence participation; they also found that as premiums increase, participation rates decrease. The two studies by Ku and Coughlin, and Lewin-VHI specifically focused on estimating the effect of a premium schedule on program participation. More specifically:

- Through a telephone survey of people who had been enrolled in the Washington Basic Health Plan for 12 months following the implementation of the program in 1988, Madden *et al.* estimated that a \$10 premium increase reduced the likelihood of an eligible, uninsured individual enrolling in the program by 13 percent.
- Ku and Coughlin combined 1995 data from Washington, Hawaii, Minnesota, and Tennessee, and the Current Population Survey, and found a consistent pattern across programs, despite differences in estimated participation rates for each program. In the aggregate, a premium set at one percent of income led 57 percent of eligible uninsured persons to enroll. When set at three and five percent of income, enrollment dropped to 35 and 18 percent of eligible uninsured persons, respectively.
- Under the Washington Basic Health Plan, premiums of seven and 11 percent of income resulted in the enrollment of 10 percent and eight percent of uninsured Washingtonians, respectively. (Lewin-VHI, 1994, in Families USA, 1997)

Although these studies are preliminary and limited to four state populations, they consistently indicate that pricing of benefits has an important influence on low income people's decision to

enroll. The authors, across studies, also conclude that the specific design and implementation of a program are likely to determine actual participation rates for that program.

Part Three. Cost-sharing and the use of services

Findings on the effect of cost-sharing on the decision to use health services are consistent with traditional microeconomic theory, and show that, as cost-sharing rises, overall use (as well as expenditures) falls, both for adults and children. The findings also suggest that the effect might be even more dramatic for low income families.

According to traditional microeconomic theory, first dollar coverage of services (i.e., without any cost-sharing) has the effect of bringing the price of medical care down to “zero,” which in turn creates an incentive for the patient to increase his demand for medical care, a phenomenon also known as “moral hazard.” In order to control for moral hazard, insurers have imposed varying levels of cost-sharing, in the form of deductibles, co-insurance, and co-payments, alone or combined, on a “flat” or income-related basis. In other words, cost-sharing, by raising the price of services, discourages an individual from purchasing as much care as when it is free at the point of service.

Although all cost-sharing elements discourage the use of services, each one has different implications. Insurers use deductibles to lower administrative costs of claims processing when many small claims are generated and the cost of handling them is high. They also use deductibles to offset reduced premiums, while still protecting the insured against large medical bills. The insured also are encouraged to shop around for the best price from providers. Co-insurance reduces the price of service for the patient but retains the incentive for the patient to shop around for less costly providers. Co-payments, an alternative to co-insurance, encourage more cost-conscious decisions when seeking care.

The most rigorous cost-sharing research findings come from the RAND Health Insurance Experiment (HIE). Despite its age—the study was conducted in the 1970s—HIE has provided a body of knowledge on the effect of co-insurance, deductibles, and income-related cost-sharing on the demand for medical services, the authority of which is uncontested. Though less rigorous in their design, other studies, which tend to focus on fixed co-payments only, confirm, if not the magnitude of effect of cost-sharing on use of care, its general direction.

Most studies focus on the private health insurance sector, and fee-for-service rather than managed care. While a few studies examine Medicaid, their scope is limited to the effect of co-payments in fee-for-service, with no information on managed care. The extent to which studies address factors, such as age, income, and health status, varies. (See summary table below.) When available, findings related to children’s (including poor and “at-risk” children) use of services and health status as a result of cost-sharing are summarized below by type of insurance.

Matrix of Selected Cost-Sharing Literature
(As of October 1998)

	Type of insurance		
	Fee-for-service	Managed care	Medicaid (FFS)
Elements of cost-sharing	Co-insurance Deductibles Income-related maximums	Co-payments Co-insurance Deductibles Income-related maximums	Co-payments
Children	Yes	Yes, but no specific age bracket	Yes, but no specific age bracket
Low income	Yes, but not by specific poverty level ¹³	Yes, but not by specific poverty level	Assumed, but not by specific poverty level
Use of services by category of service and expenditure (# studies)	Outpatient & inpatient (3) ER (1) Rx drugs (1) Prevention (1)	Outpatient & inpatient (2) ER (1) Rx drugs (1) Chiropractic (1) Prevention (1)	Outpatient & inpatient (1) Rx drugs (3) Prevention (1)
Health status (# studies)	Yes (2)	Yes, but very limited (1)	No
Studies	Quasi-experiment: ¹⁴ All RAND HIE studies, including Anderson <i>et al.</i> , 1991; Keeler <i>et al.</i> , 1987; Leibowitz <i>et al.</i> , 1985; Newhouse <i>et al.</i> , 1982; O'Grady <i>et al.</i> , 1985; Valdez, 1986.	Quasi-experiment: Shekelle <i>et al.</i> , 1996 Natural experiment: ¹⁵ Harris <i>et al.</i> , 1990 Cherkin <i>et al.</i> , 1989, 1990, 1992 in Rice and Morrison, 1994 Scitovsky and Snyder, 1972, and Scitovsky and McCall, 1977 in Rice and Morrison, 1994 Selby <i>et al.</i> , 1996	Natural experiment: Brian and Gibbens, 1974, and Helms, Newhouse, and Phelps, 1978, in Rice and Morrison, 1994 Nelson <i>et al.</i> , 1984 Reeder and Nelson, 1985 Roemer <i>et al.</i> , 1975

¹³ The definition of low income varies depending on the study. It either encompasses individuals with incomes below 100 percent of poverty, or individuals with incomes below 200 percent of poverty.

¹⁴ Control over variable of interest but nothing else, pre-/post-intervention, random assignment, and statistically equivalent experiment and comparison groups.

¹⁵ Control over variable of interest but nothing else, pre-/post-intervention measures.

Private fee-for-service

Use of services

The most extensive literature to date on the effect of cost-sharing on use of services relates to the private fee-for-service sector. All of the studies are associated with RAND HIE, and they uniformly point to a decrease in use of acute and preventive care.

- Outpatient and inpatient care

Several studies quantify the effect of co-insurance, deductibles, and income-related maximums (referred to as cost-sharing below) on children's outpatient and inpatient care use in private fee-for-service. Generally, they found that, in a sample of adults and children under 18, those who face cost-sharing are less likely to seek medical care than those who receive free care. In addition, as cost-sharing increases, the number of ambulatory visits per user decreases. (Newhouse *et al.*, 1982) Among the studies, which focused on children, it was estimated that:

1. For children under 15, cost-sharing reduces the probability of having at least one office visit by 22 percent, and the average number of outpatient visits by 30 percent. (Anderson *et al.*, 1991)
2. Children, ages 5-13, are less likely to use outpatient services than younger children (ages 0-4, except newborns). Regardless of age, children who face increased cost-sharing are less likely to have at least one office visit; they also have a lower average number of outpatient visits, and experience fewer outpatient treatment episodes than those who receive free care. Age does matter, however, in the area of hospital care. Younger children with the highest level of cost-sharing are less likely to be hospitalized than their counterparts with free care, but there is no difference in hospitalization rates between older children who have to contribute to their care and those who receive with free care. (Leibowitz *et al.*, 1985)
3. Family income has little relationship to the use of medical care. This finding was explained by the protection provided by the income-related out-of-pocket maximum: poor families (i.e., families with incomes below 200 percent of poverty) were likely to exceed the maximum, after which point care became free, thereby mitigating the effect income may have otherwise had on use of services. (Anderson *et al.*, 1991, Leibowitz *et al.*, 1985)

- Emergency room

Similarly, evidence indicates that cost-sharing has a deterrent effect on emergency room visits by nonelderly persons, including children who are younger than 18 years old. (O'Grady *et al.*, 1985) More specifically:

1. Cost-sharing decreases the probability of emergency room use by 30 percent, and actual use by 20 to 40 percent depending on the level of cost-sharing.
2. Cost-sharing decreases the use of the emergency room for serious diagnoses by 30 percent and less serious ones by 90 percent.
3. Cost-sharing effects on use are similar at all income levels, most likely due to the cost-sharing cap.

- Prescription drugs

Cost-sharing for prescription drugs has a similar deterrent effect on their use as cost-sharing for other outpatient services. On average, adults and children under 18 with cost-sharing are less likely to purchase prescription drugs, and as cost-sharing increases, the number of prescription per capita drops. (Leibowitz *et al.*, 1985)

- Prevention

Preventive care is affected by cost-sharing as is other outpatient care. Children under 13 years old, with the exception of newborns, have fewer episodes of well-care, compared to acute and chronic care, when faced with cost-sharing. (Leibowitz *et al.*, 1985)

Health status

Again, studies examining the impact of cost-sharing on children's health are limited to those related to RAND HIE. Two studies—one with a sample of adults and adolescents, ages 14-18, but no separate analysis for adolescents, the other with a sample of children, ages 0-13—found that health outcomes were minimally or not affected by cost-sharing. In addition, the evidence seems to indicate that the health status of poor children may suffer as a consequence of cost-sharing. (Valdez, 1986; Keeler *et al.*, 1987, in which poor is well below 100 percent of poverty) Major findings include:

1. Among the “typical” children participating in the study, i.e. enrollees with an average risk of developing a specific condition, health status is not affected by cost-sharing.
2. Like typical children, “at-risk” children do not experience a change in health status as a result of cost-sharing.
3. Among typical and at-risk children, there is little difference between the cost-sharing and free care groups by income level, although the evidence suggests some harmful effect of cost-sharing on the poor (e.g., anemia) and “sick poor.”

Private managed care

Use of services

Evidence available to date on the effect of cost-sharing on children's use of services in the private managed care sector focuses on HMOs (e.g., Group Health Cooperative of Puget Sound, Kaiser Permanente) and co-payments (except for the RAND HIE study examining the effect of co-insurance, deductibles, and out-of-pocket maximums on use of chiropractic care). Again, effects observed between cost-sharing and use of services in a managed care setting were similar to those in private fee-for-service.

- Outpatient and inpatient care

Two sets of studies on the Stanford University plan (a prepaid medical plan) and Group Health Cooperative of Puget Sound (a staff model HMO) found that cost-sharing (co-insurance and co-payments) reduces the amount of care sought.

Stanford University plan. Following the imposition in 1967 of a 25 percent co-insurance rate for physician inpatient services and all outpatient services, including ancillary services, on the faculty and staff at Stanford and their dependents, physician services fell by 25 percent, laboratory tests by 14 percent, and x-rays by 12 percent. Physician services for minor complaints declined by 22 percent, while those for other medical problems fell by 16 percent. This decrease was approximately the same for all age groups, and was permanent over time. However, nonprofessional staff and their children were disproportionately affected compared to professional staff and faculty, who tend to have higher incomes. Physical examinations for boys decreased by 39 percent and for girls by 57 percent. (Scitovsky and Snyder, 1972, and Scitovsky and McCall, 1977 in Rice and Morrison, 1994)

Group Health Cooperative of Puget Sound. In comparing two groups of members of Group Health Cooperative of Puget Sound—Washington state employees and their dependents, who were charged a \$5 co-payment on ambulatory care visits, and federal employees and their dependents, who were exempt, an overall drop of eight percent in ambulatory care was observed, which persisted over time. Primary care visits dropped by 11 percent, specialty care visits by three percent, and physical examinations by 14 percent, with a more dramatic drop of 20-25 percent in physical examinations for children. The co-payment effect did not vary by income level. (Cherkin *et al.*, 1989, 1990, 1992 in Rice and Morrison, 1994)

- Emergency room

One study found that co-payments for emergency room visits reduces those visits for members of Kaiser Permanente, in the same way cost-sharing reduces emergency care use in the private fee-for-service sector. The introduction of a \$25-35 co-payment for emergency department led to a marked decrease in use in 1992, mostly among patients with conditions considered likely not to present an emergency. Use also decreased between 1992 and 1993,

and the decrease was greatest for children under 5 years old. Although the co-payment group had higher rates of pediatric office visits than the two “control” groups before and after the imposition of the co-payment, it faced a greater decrease in the rate of pediatric office visits, particularly among young children. Residents of poor neighborhoods who had to pay a co-payment saw their use of the emergency department decline by 23 percent, a greater decline compared to residents of other neighborhoods who also had to pay the co-payment. (Selby *et al.*, 1996)

- Prescription drugs

According to one 1990 study of the effect of increasing the co-payment amount on prescription drugs in a staff-model HMO (Group Health Cooperative of Puget Sound), the evidence shows that the effect observed in the private managed care sector is similar in its direction to that measured in the private fee-for-service sector, as described above. For both adults and their dependents, a \$1.50 co-payment has the effect of decreasing use by approximately 11 percent. In addition, such a co-payment has a large, deterrent effect on drugs prescribed primarily for symptomatic relief, with an average decrease in use of 18 percent for these drugs. (Harris *et al.*, 1990)

- Chiropractic care

According to one study using RAND HIE data, individuals, including children under 18 who are enrolled in an HMO and have to pay 25 percent or more of a chiropractor’s services use half as many services as those who are enrolled in an HMO and have free access to those services. In addition, HMO enrollees with 95 percent co-insurance have much fewer chiropractor visits for back pain than individuals who are enrolled in a fee-for-service plan with similar co-insurance. (Shekelle *et al.*, 1996)

- Prevention

Among children who were members of Group Health Cooperative of Puget Sound, a \$5 co-payment had no effect on immunization rates for children under age two, but did result in a 22 percent drop in immunization rates for five year old children. (Cherkin *et al.*, 1989, 1990, 1992 in Rice and Morrison, 1994)

Health status

Very little information is available on the effect of cost-sharing on the health status of people who are enrolled in private managed care plans. One study on emergency department use following the imposition of \$25-35 co-payment showed no adverse effect on health, but the ability of the authors to detect such effects was limited because of the design of the study and small numbers. (Selby *et al.*, 1996)

Medicaid fee-for-service

Cost-sharing may affect the Medicaid population differently from the general population, because it usually represents a higher proportion of income for that population than other higher income populations. While some research on the California and South Carolina Medicaid program is available, the information is limited to outpatient and prescription drug use, co-payments, fee-for-service, and broad age and income groups.

- Outpatient and inpatient care

One study from the mid-1970s by Roemer *et al.* focused on the effect of \$1 co-payment for the first two physician visits each month on children and adults' use of physician services, laboratory procedures (e.g., urinalyses), diagnostic tests (e.g., Pap smears), and hospitalizations covered under California's Medicaid program. It also examined the effect of a 50 cent co-payment on the first two prescription drugs each month (see below). The authors found that the introduction of a co-payment was associated with a decrease in the use of all services, and an increase in hospitalizations for all diagnoses under study. It was hypothesized that a co-payment had the effect of delaying care, including primary care, which resulted in higher hospitalization rates, with the likely negative consequences for health status. (Roemer *et al.*, 1975) Two other California studies found similar effects, albeit with different magnitudes. (Brian and Gibbens, 1974, and Helms, Newhouse, and Phelps, 1978, in Rice and Morrison, 1994)

- Prescription drugs

Three studies were conducted on the effect a 50 cent prescription drug co-payment on Medicaid-covered children and adults in California and South Carolina. (Roemer *et al.*, 1975; Nelson *et al.*, 1984; and Reeder and Nelson, 1985) Each study found that the imposition of the co-payment reduced prescription drug use. In addition, the two South Carolina studies found that AFDC enrollees averaged 0.5-1.5 fewer prescriptions per month than other eligibility groups, and that use of all therapeutic drugs under study, except for analgesics and sedatives, dropped immediately and continued to drop over time for cardiovascular, cholinergic, diuretic, and psychotherapeutic agents.

- Prevention

As described above, the Roemer study examined the effect of \$1 co-payment for the first two physician visits each month on children and adults' use of diagnostic tests (e.g., Pap smears) covered under California's Medicaid program, among other services. The authors found that the introduction of a co-payment was associated with a decrease in preventive procedures. (Roemer *et al.*, 1975)

Part Four. Summary of findings

Based on this review of the literature on premiums and cost-sharing, we conclude that gaps in knowledge about premiums and cost-sharing are still quite large, and therefore any conclusion about the existing knowledge should be viewed with caution. Despite differences in approaches, methods, and data, studies have consistently shown that (1) increased premiums may discourage voluntary enrollment of children in state-subsidized health insurance programs, and (2) cost-sharing may decrease the probability, rather than the intensity, of children's use of services. Both findings are consistent with traditional microeconomic theory.

What we know about cost-sharing and children's use of services is that drops due to cost-sharing were observed across all types of insurance for all of the outpatient services under study. Although the evidence shows that cost-sharing decreases utilization of unnecessary care, it seems to indicate at the same time that cost-sharing is not the appropriate mechanism to discriminate between necessary and unnecessary care. Hospitalizations were not affected, except for Medicaid patients who appeared to delay care, which resulted in higher hospitalization rates overall.

Although most studies included children in their sample, few took a close look at children by different age groups, which are known to be associated with different levels of use. RAND HIE provides the best information so far, though it does not separately analyze adolescents. It indicates that patterns of care as a result of cost-sharing vary by age group, between younger children (ages 0-4), and older children (ages 5-13).

Similarly, although most studies included low income families, none broke down the information by age groups and poverty levels, which would be of relevance to the implementation of the CHIP program. Studies on private managed care yielded the most information. The Stanford University study showed little relationship between utilization and income, but did find that nonfaculty employees and dependents, who had lower incomes than faculty, had fewer annual physical exams. The Selby study found a disproportionate effect on families residing in poor neighborhoods, but they were a small proportion of the group under study. RAND HIE, which examined private fee-for-service, would probably have found a deleterious effect on use by income, had the design of the study not protected lower income families (i.e., families with incomes below 100 or 200 percent of poverty) with an income-related out-of-pocket maximum. And the Medicaid studies, which are assumed to focus on low income children, uniformly show a decrease in use following the introduction of co-payments, but did not compare the Medicaid population with the privately insured population to show the disproportionate effects on the generally poorer and sicker Medicaid population. Based on these studies, one could conclude that cost-sharing would appear to disproportionately affect low income children, which makes income related cost-sharing an attractive policy choice.

What we know about cost-sharing and children's health status is limited to RAND HIE. While studies related to the experiment offer mixed results, they seem to indicate that physiological health for average and at risk children does not suffer as a result of cost-sharing. The evidence, though not as strong, also suggests that low income children, whether they are at risk or not of developing a specific condition, suffer some harmful effect from cost-sharing. Shielding low income families from excessive cost-sharing may explain why a difference in health status was not observed.

What we do not know about cost-sharing and use of services and health status remains substantial. For example, completely lacking is any information on cost-sharing and Medicaid managed care, explained perhaps by the relatively recent introduction of managed care in the program, which occurred after the completion of most of the studies. Also missing are national level data, data on services that are not acute or preventive care, and finer analyses by age groups, income brackets, and chronic conditions across types of insurance.

Part Five.Implications and recommendations

The findings from the literature have major implications for the use of premiums and cost-sharing in the CHIP program. Premiums and cost-sharing may all contribute to nonenrollment of children and suboptimal use of needed services by enrolled children. A simple example will help illustrate these effects. Let's assume that Ms. Smith and her two children—age 10 and age 14—are currently uninsured. Let's assume further that each of her children has an average annual utilization of ambulatory care visits (i.e., three in 1996¹⁶), and needs two prescriptions filled over the year. Because of Ms. Smith's annual income of \$25,253 (i.e., the equivalent of 185 percent of the federal poverty level), the children are eligible for CHIP.

The table below shows the total out-of-pocket costs the family will incur as a result of a premium set at two percent of income, a deductible of \$100 per child, a 20 percent co-insurance for ambulatory physician visits, and co-payments of \$5 per visit and \$5 per prescription. As can be seen, with the premium alone, the family will have to pay \$1010 in total annual premiums, which is roughly equivalent to the total average cost of care for Ms. Smith's two children (i.e., \$1,269). If the family happens to live close to a community health center, which by law has a duty to serve uninsured patients, Ms. Smith might well decide to remain uninsured in order to obtain free care for her children through the center. The cost-sharing requirements provide additional incentives for her to not enroll her children in CHIP. If insured, Ms. Smith will face a deductible; she may gamble that her costs will not exceed the deductible, and forgo the premiums and the insurance. In addition, the rate of co-insurance makes her financially vulnerable, and co-payments may discourage her from seeking needed care for her children. Note also that Ms. Smith's total out-of-pocket expenditures exceed the five percent cumulative maximum required by CHIP by \$60.

This simple scenario points out the need for policymakers to make an artful use of premiums and cost-sharing, as some states with approved CHIP programs have attempted (see table below). States choosing to impose premiums and cost-sharing on low income families should design a system that includes as little out-of-pocket requirements as possible. The literature suggests they should opt for low premiums, a high deductible for inpatient care (except, perhaps, for young children), and co-payments targeting certain types of service (e.g., brand name vs. generic prescriptions) and certain sites of care (e.g., emergency room vs. physician office) to encourage a more cost-conscious use of resources. Co-payments should be favored over co-insurance, which should be avoided, if possible, because of the higher financial exposure co-insurance imposes on low income families. Finally, states should broaden the definition of preventive services

¹⁶ Schappert, SM. Ambulatory care visits to physician offices, hospital outpatient departments, and emergency departments: United States, 1996. Vital and Health Statistics, Series 13, No. 134, February 1998. Hyattsville, Maryland: Department of Health and Human Services, National Center for Health Statistics.

exempted from cost-sharing, to include not only well-baby and well-child care, and immunizations, but also secondary prevention, an essential component of pediatric care.

Annual premiums and cost-sharing for a family of three with income at 185 percent of the federal poverty level
under a hypothetical case and three approved CHIP programs.
(As of October 1998)

	Hypothetical case	Maine	North Carolina	Utah
Premiums	Total for 2 children = \$1010 (2% of income: \$42 per month per child; \$505 per year per child)	Total for 2 children = \$360 (\$30 per month per family)	Total for 2 children = \$100 (\$100 flat enrollment fee for 2 children)	\$0 (None)
Deductible	Total for 2 children = \$200 (\$100 per child)	\$0 (None)	\$0 (None)	\$0 (None)
Co-insurance	Total for 2 children = \$60 (child 1 = \$25 [(3 x \$75)-\$100/5]; child 2 = \$35 [(3 x \$91)-\$100/5])	\$0 (None)	\$0 (None)	\$0 (Yes: hospital visit, lab tests, mental health, dental fillings)
Co-payments	Total for 2 children = \$50 (3 x \$5 per visit plus 2 x \$5 per Rx per child)	\$0 (None)	Total for 2 children = \$54 (3 x \$5 per visit plus 2 x \$6 per Rx per child)	\$64 (3 x \$10 per visit plus 2 x \$1 per child)
Total out-of-pocket expenditures for 2 children	\$1,320	\$360	\$154	\$64
5% cumulative maximum	\$1,262	\$1,262	\$1,262	\$1,262
Total average annual cost for for 2 children, ages 3-18¹	\$1,269	\$1,269	\$1,269	\$1,269
Average Medicaid spending per child in 1994²	\$1,360	\$1,360	\$1,360	\$1,360

¹ Data from 1987 National Medical Expenditure Survey in Lewit, E. and Monheit, A. Expenditures on Health Care for Children and Pregnant Women. In The Future of Children: U.S. Health Care for Children, Vol.2, No.2, Winter 1992, pp.95-114. Los Altos, California: Center for the Future of Children, The David and Lucile Packard Foundation.

² Liska *et al.* Medicaid Expenditures and Beneficiaries: National and State Profiles and Trends, 1988-1994. (Second Edition) November 1996. Washington, D.C.: Kaiser Commission on the Future of Medicaid.

ATTACHMENT

HEALTH INSURANCE PREMIUMS AND COST-SHARING: LESSONS FROM THE LITERATURE

ANNOTATED BIBLIOGRAPHY

(As of October 1998)

Anderson, Geoffrey, Robert Brook, and Albert Williams. 1991. "A Comparison of Cost-Sharing Versus Free Care in Children: Effects on the Demand for Office-Based Medical Care." *Medical Care*, Vol. 29(9), pp. 890-898, September.

This article presents results from a longitudinal study of 2,016 children, ages 0-15, who participated in RAND's Health Insurance Experiment (HIE), which compares the effect of cost-sharing to the effect of free care on the use of office-based medical care. In addition, the article examines the effect of cost-sharing on charges for office-based care, charges by service category, and the price of services received. The authors used multivariate regression (Ordinary Least Squares, or OLS, regression, and logistic regression) to analyze the data.

The RAND HIE, a quasi-experiment, was conducted from November 1974 to January 1982 to track the use of services and health status of a nationally representative sample of families from six sites--Dayton, Ohio; Seattle, Washington; Fitchburg, Massachusetts; Franklin County, Massachusetts; Charleston, South Carolina; and Georgetown County, South Carolina. Families were randomly assigned to a three year (70 percent of the families) or a five year (30 percent of the families) term and to one of 14 fee-for-service plans, which covered identical physician and nonphysician services, but varied by level of cost-sharing from none to 95 percent co-insurance. More specifically, plans offered the following five different cost-sharing arrangements:

- (1) no cost-sharing, i.e. families receive first dollar coverage of all services (called the Free Care Plan);
- (2) 25 percent co-insurance, i.e. families pay a quarter of their medical expenses out-of-pocket;
- (3) 50 percent co-insurance, i.e. families pay half of their medical expenses out-of-pocket;
- (4) 95 percent co-insurance on outpatient care but free inpatient care (called the Individual Deductible Plan); and
- (5) 95 percent co-insurance on all medical expenses (called the Catastrophic Expense Plan).

When co-insurance was required, plans placed a ceiling on the annual maximum out-of-pocket expenses tied to family income, which varied between 5 (lowest incomes) and 15 percent (higher incomes) and \$1,000 (\$150 per person or \$450 per family under the Individual Deductible Plan), whichever was less.

Major findings include:

- Families who had to participate in their medical expenses were less likely to use office-based medical care than those who received free care. A child's probability of having at least one instance of care decreased by 22 percent, and the actual numbers of instances of care decreased by 30 percent for children enrolled in a cost-sharing plan in comparison with children on the free care plan.
- Cost-sharing may not have a larger deterrent effect for low income children (defined as children in families in the lowest third of the family income distribution of participants, or with incomes below 200 percent of poverty) than for those with higher family incomes, although this may be explained by the mitigating effect of the income-related expenditure ceiling.
- Total charges for professional services decreased by 30 percent for children enrolled in a cost-sharing plan in comparison with children on the free care plan. While cost-sharing affects the number of times a child will receive office-based care, and therefore the total charges for that care, it does not necessarily impact the price paid per unit of service received.

The authors conclude that "there is a large difference between cost-sharing insurance plans and free care in the demand for office-based medical care in children," with cost-sharing resulting in fewer, but not lower priced, services.

Buck, Jeffrey and Mark Kamlet. 1993. "Problems with Expanding Medicaid for the Uninsured." *Journal of Health Politics, Policy, and Law*, Vol. 18(1), pp. 1-25, Spring.

This article examines proposals that are designed to provide health care to the uninsured by expanding Medicaid programs. The authors critique and analyze each plan, stating the drawbacks and suggestions of each. The authors find fault in the fiscal impacts of most of the proposals. They also notice that problems will arise from the differences between Medicaid and private insurance plans, including differences in benefits, cost-sharing, managed care, cost containment, and provider payment.

The cost-sharing issue is the most relevant to the Child Health Insurance Program. Medicaid programs are restricted in their ability to impose cost-sharing on enrollees. The categorically needy cannot be charged premiums and certain services (child or emergency) cannot be subject to co-payments or deductibles. If cost-sharing is permitted, states can only charge nominal amounts. The authors refer to the RAND HIE in stating that co-insurance affects outpatient utilization by reducing the probability of visits, especially for poor children. The effect of cost-sharing on health outcomes was minimal, and was concentrated in the low income group of the study. The authors state that cost-sharing could be a method to expand Medicaid coverage to more people. They believe premiums would discourage enrollment, but co-insurance (deductibles and co-payments) could actually be used to expand enrollment of the uninsured and would reduce the

incentive for individuals to leave their existing health plans that use cost-sharing in order to receive less expensive care from a Medicaid expansion program.

The authors believe that there are various ways to deal with the problems associated with a Medicaid expansion, but the most appropriate would be to reduce the differences between Medicaid and private sector health plans. According to the authors, the fiscal and structural problems raised by a Medicaid expansion do not indicate a need to abandon efforts to expand the program, but instead provide a reason to change private and Medicaid coverage.

Families USA. 1998. *Premiums and Cost-Sharing Proposed under Title XXI, The New Children's Health Insurance Program*. Washington, DC: Families USA, February.

This report, which reviews proposed premiums and cost-sharing provisions of 11 of 17 state Title XXI plans filed with the federal government as of mid-February 1998, argues that state choices on premiums and cost-sharing will directly affect families' decisions to enroll in the new program and to use services, even with the existing provisions against excessive out-of-pocket expenses that are built into the law.

Premiums are likely to reduce participation in the program, and as premiums rise, fewer and fewer people will enroll. This prediction is based on 1997 estimates by the Urban Institute that showed that only 57 percent of uninsured individuals would participate, if a premium scale were set at one percent of income, a proportion that would be even lower were the scale to be set at a higher rate (35 percent at three percent, 18 percent at five percent).

Cost-sharing, in the form of co-payments, co-insurance, and deductibles, are likely to discourage families from seeking needed care and penalize the sickest children the most. In addition, based on the experience of states that have used cost-sharing in their Section 1115 programs, state choices about how to administer cost-sharing (e.g., how the state will collect premiums, adjust premiums if income changes, notify families who miss a payment, reenroll families who were disenrolled for nonpayment, monitor co-payment to determine that families have reached the five percent maximum and notify families that cost-sharing is no longer required, and design an appeals process for wrongful disenrollment or continued imposition of cost-sharing) are likely to create additional barriers to care.

Families USA. 1997. *A Guide to Cost Sharing and Low-Income People*. Washington, DC: Families USA, October.

This guide surveys the research literature on premiums and cost-sharing and recommends ways to minimize some of the adverse consequences associated with them.

According to the guide, problems associated with cost-sharing include: discouraging people, particularly low income people, from seeking needed care, or encouraging them to delay needed care, which may result in more expensive care; increasing the “risk of dying” among the low-income population; penalizing the sickest beneficiaries, who use more health care services due to chronic and disabling diseases and who then end up paying high out-of-pocket costs for their health care; and creating a provider tax, because providers participating in Medicaid cannot refuse to treat Medicaid patients who cannot pay, and therefore have to absorb the cost-sharing amount, in effect reducing their Medicaid reimbursement. In addition, cost-sharing on prescription drugs may be especially harmful for Medicaid beneficiaries, because it selectively decreases use of drugs to treat life-threatening conditions, such as heart conditions, or drugs used for psychiatric conditions, such as schizophrenia.

The guide also contends that Medicaid cost-sharing protections may be inadequate for three main reasons. First, poor families may not be able to afford even "nominal" out-of-pocket costs. Second, people covered under Medicaid do not necessarily know that they can still receive care, even if they cannot pay the Medicaid cost-sharing amount. And third, the federal government improperly waives the protection against cost-sharing for non-emergency services in a hospital emergency room.

The guide proposes seven strategies aimed at reducing the harmful effects of Medicaid cost-sharing: (1) imposition of co-payments, rather than deductibles and co-insurance; (2) caps on total out-of-pocket expenses; (3) caps by type of service (e.g., prescription drugs); (4) prohibition of cost-sharing on preventive services, specified prescription drugs, home health services, and durable medical equipment; (5) no or limited cost-sharing for non-emergency services provided in an emergency room; (6) prohibition of the sale or transfer of cost-sharing debt to a bill collection agency; and (7) prohibition of cost-sharing in Medicaid HMOs.

In addition to cost-sharing, states impose premiums in their programs aimed at expanding coverage for low income uninsured people, despite some evidence indicating the even a small increase in premiums results in a significant decline in participation in these programs. In addition to the 1997 Urban Institute study, a Lewin-VHI study found that, when premium contributions in Washington State's health insurance program for the uninsured were 7 percent of a household's income, only 10.3 percent of eligible persons bought the plan; when premiums were 11 percent of a household's income, only 8 percent bought the program. State rationales for imposing premiums include targeting state subsidies to the neediest individuals and families, erasing the "welfare stigma" associated with programs for the poor, and reducing state spending on the program.

In establishing a fair premium scale, states should keep premiums for low income families at a minimum. Families with incomes below the federal poverty level should be exempt from premiums, and families with modest incomes above 100 percent of poverty should be either exempt from premiums or restricted to minimal premiums. In addition, states should use a progressive sliding premium scale, account for the impact of other cost-sharing requirements (such as deductibles and co-payments) when setting premiums, and cap the amount of premiums paid by large families.

Harris, Brian, Andy Stergachis, and L. Douglas Ried. 1990. “The Effect of Drug Co-Payments on Utilization and Cost of Pharmaceuticals in a Health Maintenance Organization.” *Medical Care*, Vol. 28(10), pp. 907-917, October.

This quantitative study measures changes in drug utilization and cost following the imposition of co-payments for prescription drugs on working age adults and their dependents who were continuously enrolled in a staff model Health Maintenance Organization (Group Health Cooperative of Puget Sound, or GHC). The design for the research is a comparative pre-/post-intervention design, in which utilization and cost of prescription drugs between the “experiment” group (n=19,982) and the “comparison” group (n=23,164) was observed over a three year period, excluding a baseline year during which neither group faced co-payments. In year one, the experiment group had to pay a co-payment of \$1.50 for prescription drugs, which was increased to \$3.00 in year two, and remained at that level in year three but was required for each monthly supply. In addition, in year three, coverage of nonlegend drugs (except insulin) was dropped, and a \$5 co-payment for outpatient visits as well as a \$25 co-payment for emergency room visits were imposed. The comparison group had no co-payment requirements over the same time period. The effect of drug co-payment on drug utilization and cost was analyzed by comparing means and standard deviations between the two groups. Analysis of covariance was also used to control for enrollees’ age, sex, number of years as a GHC enrollee, and the value of each outcome variable in the previous year.

The study found that cost-sharing had the following impact on the use and cost of prescription drugs:

- Drug utilization of the group with co-payments was significantly reduced when compared to the group with no co-payments. After the \$1.50 increase in co-payment rates after the first year, there was a 10.7 percent reduction in total prescriptions in the co-payment group when compared to the comparison group. After the co-payment reached \$3.00 in the second year, a 10.6 percent additional relative reduction occurred between the co-payment and comparison groups. In the third year, the \$3.00 co-payment combined with physician visit co-payments resulted in an additional relative reduction of 12 percent.
- While a large difference was observed in the use of “discretionary” (defined as “drugs prescribed primarily for symptomatic relief”) drugs between the co-payment and

comparison cohorts, with a drop in the co-payment cohort use of 17.3 percent in year one, 19.2 percent in year two, and 19 percent in year three, the effect on “essential” (defined as “drugs whose withdrawal could have important effects on health status”) drug use was less consistent. Use of essential drugs increased annually in both groups, but decreased by 13 percent in the co-payment group in year two.

- Costs per enrollee increased annually in both groups, but after adjustment costs per enrollee were lower in the co-payment group. However, costs per prescription were higher in the co-payment group in all years.

The authors conclude that “cost-sharing, in the form of prescription drug co-payments of \$1.50 to \$3.00, has a significant impact on reducing drug utilization” and drug costs in an HMO setting, though the impact was larger on utilization than costs. They suggest that lower use and cost due to cost-sharing may decrease an HMO’s expenditures; however, this is contingent on the fact that co-payment policies will not result in increased overhead costs, adverse patient outcomes, or increases in the use of other services.

Hearne, Jean, and Kathy Patchan. 1998. *Benefits and Cost-Sharing: Meeting CHIP Rules When Subsidizing Employer Sponsored Plans*. Washington, DC: Institute for Health Policy Solutions.

This document by the Institute for Health Policy Solutions was prepared by a roundtable discussion group convened to discuss approaches that states could use in preparing to subsidize the cost of employer coverage for CHIP eligible children. The report was also designed to aid programs in dealing with other operational and administrative problems that may arise. The roundtable session was designed to propose approaches that would assure access to the minimum benefits that CHIP offers and also maximize access to health insurance coverage.

Several alternative methods are proposed for ensuring CHIP benefits and cost-sharing regulations are met by subsidized employer plans. The two approaches discussed in this report are:

- States develop contracts with health plan carriers and Health Maintenance Organizations to offer CHIP-qualified plans to employers.
- States supplement the subsidized employer plans with publicly offered benefits to make sure that the benefits and cost-sharing requirements meet minimum CHIP standards.

In order to allow employer plans to provide coverage for CHIP-eligible children, the report suggests that states could directly negotiate with health plan carriers and HMOs in order to establish plans that would be eligible for CHIP. The report suggests that states could identify the most prominent suppliers of health plans and solicit their help in developing plans that would meet CHIP requirements on benefits and cost-sharing. However, it would be difficult for carriers and HMOs to establish who is CHIP-eligible

very easily. A solution would be to “carve-out” CHIP-eligible children as separate policyholders, rather than coordinate the plans with other family members’ coverage.

States could also try to create programs that would “fill-in” benefits and cost-sharing to compensate for employer coverage that does not meet the CHIP requirements. These programs would need to install procedures that would ensure that low income families pay “nominal” cost-sharing amounts and that families with income above 150 percent of the poverty level pay no more than 5 percent of total family income. There are two possibilities that the report proposes to deal with these “fill-in” policies: CHIP-eligible children would pay normal co-insurance amounts or co-payments and seek reimbursement from the state for amounts that exceed CHIP standards; or states could pay cost-sharing amounts on behalf of CHIP-eligible children.

Either of these alternatives would create an administrative problem for states. Not only would these new regulations have to be put into effect, but also because the co-payment amounts are relatively small, it would prove difficult and inefficient to reimburse patients or pay plans very small amounts at a time. States could also make carriers provide the cost-sharing “fill-in”, and pay the carriers directly to do so. This would cost money, but possibly cut down on administrative costs.

Keeler, Emmett, Elizabeth Sloss, Robert Brook, Belinda Operskalski, George Goldberg and Joseph Newhouse. 1987. *Effects of Cost-Sharing on Physiological Health, Health Practices, and Worry*. Santa Monica, California: RAND, August.

This article measures the effects of cost-sharing in health insurance on patient physiological health, health practices, and worry related to health issues. This quantitative study was conducted as part of the RAND Health Insurance Experiment (see first article of this review by *Anderson et al.* for a description of HIE). The sample population for this study was made up of 3,565 people between the ages of 14 and 61.

In order to measure the physiological health, health practice, and worry components of this research, twenty additional measures on physiological health (i.e., lung function, shortness of breath, phlegm production, hay fever, angina, ECG abnormalities, ulcer, dyspepsia, varicose veins, chronic joint disorders, walking speed, grip strength, near vision, hearing in each ear, glucose intolerance, thyroid abnormalities, anemia, urinary tract infection, and acne), and nine additional measures of health practices (i.e., weight, smoking, exercise, alcohol consumption, use of relaxants, seat belt use, frequency of rectal examinations, frequency of pap-smears, and breast self-examination) were introduced into the design. Worry and pain were assessed through a survey taken before and after enrollment in the plans.

Using linear and logistic regression, the authors studied cost-sharing’s effect on the health status of patients with different income and risk levels at the end of enrollment. Results for average-risk, elevated-risk, elevated-risk and low income, and elevated-risk and high

income participants are presented below. Low income was defined as the lowest one-fifth of the income distribution (mean=\$8,100 for a family of four in 1985 dollars), which was well below the poverty level, and high income was defined as the highest two-fifths of the income distribution (mean=\$44,600); families with incomes exceeding \$61,000 were excluded.

The authors found that:

- The magnitude of the effect of cost-sharing on the physiological health measures between free care enrollees with average-risk characteristics and cost-sharing enrollees with average-risk characteristics varied on each of the measures, but free care enrollees scored significantly better than cost-sharing enrollees on three physiological health measures: functional near vision, functional far vision, and diastolic blood pressure. On ten measures, they only fared better. Similarly, the magnitude of the effect of cost-sharing on health practices varied: there were no significant differences between plans in the measures of health practices; however, free care enrollees with average-risk characteristics fared better on five of nine practices, including those related to early detection of cancer and blood pressure.
- Among individuals at elevated risk of having a specific condition at the end of the study, those enrolled in the free care plan had significantly better hemoglobin values and far and near corrected vision than those enrolled in the cost-sharing plans. However, they fared significantly worse for uncorrected average hearing threshold level in the left ear.
- Free care enrollees with elevated risk and low income levels did better on the more common measures of physiologic health than cost-sharing enrollees.
- People with free care were more likely to report worry and pain regarding the health conditions considered in the study than enrollees on a cost-sharing plan.

Overall, except for vision, blood pressure, and anemia, free care does not offer much benefit to physiologic health over cost-sharing, and cost-sharing does not appear to have many large deleterious effects, although evidence on the “sick-poor” group suggests “some harmful effects of cost-sharing, but is far from conclusive.” In addition, the benefits of free care on health practices “were mixed and, in the aggregate, small,” and free care enrollees experienced more worry or pain from the conditions under study.

The authors conclude that “despite the limited gains in health, free care leads to large differences in utilization for the healthy. Because most people are healthy, it is expensive and inefficient to use free care for all as the method to assure the health needs of the few.” However, these conclusions should not be extrapolated to the poor, since poor families participating in the study were protected against more severe cost-sharing by the income-related expenditure ceiling.

Ku, Leighton, and Teresa Coughlin. 1997. *The Use of Sliding Scale Premiums in Subsidized Insurance Programs*. Washington, DC: The Urban Institute, March.

This quantitative analysis of 1995 data from four state programs—Washington’s Basic Health Plan, Minnesota’s MinnesotaCare, Hawaii’s QUEST, and Tennessee’s TennCare—examines the relationship between sliding scale premiums and participation rates. While this study fills an information gap, the authors also point to the newness of the programs under study, the limited data available, and the roughness of their estimates as limitations to the study findings.

After reviewing some conceptual issues related to premiums, and the experiences in Hawaii, Minnesota, Tennessee, and Washington, the authors present their major findings, including:

- As premiums consume an increasing share of income, participation declines. For example, in Hawaii, among families with incomes between 175 and 200 percent of poverty, 45 percent of the eligible population would participate, and among families with incomes between 275 and 300 percent of poverty, 3 percent would join the program.
- In the aggregate (i.e., across all programs), when premiums are set at one percent of income, 57 percent of the uninsured would participate. When they are set at three, five, and seven percent of income, 35, 18, and 10 percent, respectively, would join the program.
- Although the downward pattern is consistent across states, actual estimates for each state are different, possibly due to variations in program design and implementation.

The authors conclude that, while some low income people are willing to pay premiums, others are not. They suggest that policymakers consider a premium schedule that achieves the desired program enrollment and stays within program budget by examining factors such as price, benefit package, outreach, and availability of employer coverage. They also encourage administrators to periodically revise their premium schedules and other program features to reflect actual experience and changing budgetary and policy priorities.

Leibowitz, Arleen, Willard Manning, Jr., and Joseph Newhouse. 1985. *The Demand for Prescription Drugs as a Function of Cost-Sharing*. Santa Monica, California: RAND, Prepared for the U.S. Department of Health and Human Services, October.

This quantitative study, through variance, covariance, probit, and linear regression techniques, estimates the variation in the use of prescription drugs when co-insurance rates on pharmaceuticals and medical services are implemented. The data used in this

study is from the RAND Health Insurance Experiment, which studied the effects of cost-sharing by placing enrollees in plans with different levels of cost-sharing (see first article of this review by *Anderson et al.* for a description of HIE). The sample is made up of 3,860 enrollees younger than 65, including children.

The study found that:

- Patients with insurance coverage that offers free care tend to buy more prescription drugs than patients on any of the cost-sharing plans. In addition, as cost-sharing rises, the number of prescriptions purchased per capita in an ambulatory setting falls.
- As cost-sharing rises, the mean per capita drug expenditure in an ambulatory setting falls, a response determined by the number of prescription purchased rather than by the price per prescription. Specifically, the plan with 95 percent co-insurance had expenditures per person that were approximately 60 percent lower than those under the free care plan. In addition, annual drug expenditures varied significantly by age, sex, and geographic location. Children's expenditures were half of men's annual expense for drugs, even though they were more likely than men to have at least one prescription filled. In the Dayton, Ohio study site, participants purchased significantly more drugs, experienced higher expenditures, were more likely to obtain drugs directly from their physician, and were less likely to purchase generic drugs at the pharmacy than other sites.

The authors conclude that cost-sharing for prescriptions drugs affects use of and expenditures on drugs in the same way cost-sharing on ambulatory medical services affects these services' use and expenditures.

Leibowitz, Arleen, Willard Manning, Jr., Emmett Keeler, Naihua Duan, Kathleen Lohr, and Joseph Newhouse. 1985. *The Effect of Cost-Sharing on the Use of Medical Services by Children: Interim Results from a Randomized Controlled Trial*. Santa Monica, California: RAND, Prepared for the U.S. Department of Health and Human Services, September.

This report is another publication associated with the RAND Health Insurance Experiment (see first article of this review by *Anderson et al.* for a description of HIE). The study was quantitative in nature and attempted to measure the effects of cost-sharing policies on the utilization of children's health services. This study is based on 40 percent of the data that later became available as part of the experiment. The sample for this study was made up of 1,136 children, ages 0-13 (with the exception of newborns).

The results of this study showed that:

- Older children (ages 5-13) generally had a lower probability of using outpatient services, compared to younger children (ages 0-4). Regardless of age, children with the highest level of co-insurance had a lower probability of having at least one office visit than children who received free care, and, while younger children with the highest level of co-insurance had a lower probability of being hospitalized, this pattern was not true for older children. Similarly, the average number of visits for outpatient services and the number of outpatient treatment episodes decreased as cost-sharing increased. Outpatient visits per year numbered 2.9 per child in cost-sharing plans, compared to 3.5 in the free care plan; the number of outpatient treatment episodes totaled 2.6 per child per year in the 95 percent co-insurance plan, compared to 4.4 in the free care plan.
- After breaking down the episodes by type of outpatient care (i.e., acute, chronic, and well-care), the study found that preventive services faced the same problems as acute and chronic care services, i.e. cost-sharing reduced episodes of well-care, although to a lesser degree than those of acute and chronic care.
- Children in the 95 percent co-insurance plan were significantly less likely to see a pediatrician for primary care, and for both primary and specialty care.
- Family income (with low income defined as 200 percent of poverty or less) was found to have little relationship with use of medical care.
- Total expenditures and outpatient expenditures decreased as cost-sharing increased. Total expenditures per child in the 95 percent co-insurance plan were 75 percent of the total expenditures per child in the free care plan. Approximately half of all expenditures were spent on outpatient services. Outpatient expenditures in the 95 percent co-insurance plan amounted to almost two-thirds of those in the free care plan.

Based on these findings, the authors conclude that cost-sharing affected whether parents sought treatment for their children but did not affect the amount of treatment after the visit was initiated. Decreased outpatient expenditures explain most of the reduction in total expenditures because cost-sharing did not appear to affect inpatient care use as much. Due to the income-related maximum limit on cost-sharing levels, poor families were likely to exceed the maximum, so that care after that point became free, mitigating any effect income may have otherwise had on use of services.

Lohr, Kathleen, *et al.* 1986. "Use of Medical Care in the RAND Health Insurance Experiment: Diagnosis-and Service-Specific Analyses." *Medical Care*, Vol. 24(9): supplement, pp. S1-S80, September.

This quantitative study, through variance, covariance, probit, and linear regression techniques, estimates the variation in the use of health services when co-insurance rates on pharmaceuticals and medical services are implemented. The data used in this publication describes the findings of the RAND Health Insurance Experiment, which studied the effects of cost-sharing by placing enrollees in plans with different levels of cost-sharing (see first article of this review by *Anderson et al.* for a description of HIE). The sample is made up of 3,860 enrollees younger than 65, including children.

The study found that:

- When compared to free care, plans with cost-sharing reduced the probability of medical contact during each year of the study. This effect seemed to be more pronounced for preventive treatments and acute diagnoses. In addition, the group that was most affected by cost-sharing was poor children (defined as children with family incomes below 200 percent of poverty).
- The findings of the experiment did not allow the authors to directly infer anything regarding whether cost-sharing deterred inappropriate care or affected the use of appropriate care. However, poor children on cost-sharing plans showed a 40 percent decrease in seeking medical care when compared to those on free care plans.
- Lower probabilities of use for medications and tests occurred in cost-sharing plans when compared to free care plans.
- The authors found little evidence of overuse of office visits, tests, procedures, and pharmaceuticals due to free care as opposed to cost-sharing.
- Financially disadvantaged (low income) individuals enrolled in cost-sharing plans had less episodes of medical care use than did more well-off individuals. This especially affected poor children.
- Health outcomes were negligibly affected by cost-sharing plans for both adults and children.

Madden, Carolyn, Geoffrey Hoare, Marilyn Mayers, and William Hagens. 1992.
“Washington’s Basic Health Plan: Choices and Challenges.” *Journal of Public Health Policy*, Vol. 13(1), pp. 81-96, Spring.

This article describes the political context within which Washington’s Basic Health Plan was created, key features of the program, and primary implementation issues faced by program administrators.

Washington's Basic Health Plan is a separate program from Medicaid, funded with state general revenues, which offers health insurance to individuals under age 65 with incomes below 200 percent of poverty. The Basic Health Plan requires financial participation by enrollees, in the form of sliding scale premiums and co-payments. Preventive care is exempt from co-payments. Reasons for imposing cost-sharing included reducing program costs to the state by shifting premium costs to enrollees and creating incentives for decreased utilization, instilling in enrollees more responsibility for and commitment to their health, and reducing the welfare stigma. Concerns included a negative effect on enrollment, particularly for those in good health.

In drawing lessons from the first three years of implementation, the authors conclude that low income individuals value insurance and are willing to purchase it when premiums are affordable. In addition, providers report that those who enroll are not sicker than commercial enrollees, except for a higher number of pregnancies in one county. As a result, the utilization experience of Basic Health Plan enrollees in urban areas appears to be similar to that of commercial enrollees.

Madden, Carolyn, Allen Cheadle, Paula Diehr, Diane Martin, Donald Patrick, and Susan Skillman. 1995. "Voluntary Public Health Insurance for Low-Income Families: The Decision to Enroll." *Journal of Health Politics, Policy and Law*, Vol. 20(4), pp. 955-972, Winter.

This article examines the enrollment choices of low income families in the Washington Basic Health Plan, a state-subsidized voluntary insurance plan offered through managed care organizations to families with incomes below 200 percent of poverty.

Using survey data on families who had been enrolled for approximately one year following the implementation of the program, the authors found that:

- Families who enroll are more likely to have a female head of household, young children, and a family member who has a part-time job and some college education.
- Higher premiums and availability of other insurance coverage decrease the probability of enrolling. The average monthly premium for enrolled families was \$26 compared to \$44 for families who were not enrolled. The price of coverage significantly influences families' decision to enroll: a \$10 increase in the monthly premium lowered likelihood of enrolling by 13 percent.

Based on their findings, the authors conclude that, while voluntary public program, such as the Basic Health Plan provide attractive health coverage for low income families who lack other affordable options, "program architects need to weigh carefully the need for additional revenue with the goal of increasing participation." According to another 1994 Washington State survey, 70 percent of those surveyed said they did not enroll primarily because the premiums were too high. In addition, a 1991 study by the Washington

legislature found that flat premiums encouraged larger families to enroll, and recommended that the premium structure be changed to reduce the disproportionate subsidy to large families. In other words, internal program design features have a substantial effect on how many and which families decide to enroll.

Mirvis, David, Cyril Chang, Christopher Hall, Gregory Zaar, and William Applegate. 1995. "TennCare--Health System Reform for Tennessee." *Journal of the American Medical Association*, Vol. 274(15), pp. 1235-1241, October.

This article describes the design and rationale of TennCare, and discusses key issues of implementation, including cost-sharing. TennCare is a research and demonstration waiver program approved by the federal government under Section 1115 of the Social Security Act, which has been in effect since January 1, 1994. Under this statewide program, the state has expanded Medicaid coverage to AFDC eligible, medically needy, and uninsured individuals up to 400 percent of poverty, and mandatorily enrolled them into managed care plans.

Premiums, co-payments, and deductibles are imposed on an income-based sliding scale. Individuals under the poverty level and mandated Medicaid eligibility groups are exempt from cost-sharing, but all other children and adults are required to pay cost-sharing on a graduated income scale. Individuals between 100 and 200 percent of poverty pay a premium of up to 20 percent of the capitation rate and co-payments of up to 10 percent of costs. Premiums range from \$2.74 per individual/\$6.84 per family to \$10.94 per individual/\$27.35 per family with incomes between 100 and 150 percent of poverty, and from \$10.94 per individual/\$27.35 per family to \$19.15 per individual/\$47.87 per family with incomes between 150 and 200 percent of poverty. Individuals with incomes above 200 percent of poverty pay premiums of up to 100 percent of the capitation rate and co-payments of up to 10 percent of costs. Maximum deductibles are set at \$250 per individual and \$500 per family per year.

Implementation problems were well publicized at the time. Among them were the state's failure to send premium payment booklets to 80,000 enrollees, and the reimbursement of premiums already paid by enrollees due to inadequate accounting systems, which contributed to a loss of \$37 million in revenues for the state. As a result of these problems, the state announced that it would drop 91,000 enrollees who had failed to pay their premiums, although the reason for this failure was unclear. The authors speculate that the state may have failed to send premium payment booklets to many of these enrollees, and that cost-sharing may represent a significant burden to families with low to moderate incomes.

National Association of Child Advocates. 1998. *Good Ideas from State Plans: State Child Health Plans Provisions That Can Benefit Children*.